

# [Novel Algorithm, Method and apparatus for In-Service Testing of Passive Optical Networks (PON) and Fiber to the Premise (FTTP) Networks]

## Abstract

Locating a fault of an optical transmission line in a system which performs bidirectional optical communication between a wire center Optical Line Terminal (OLT) and plural subscriber devices, Optical Network Terminal (ONT). In this ITU defined topology, a feeder extending from the OLT is branched by a passive (non powered) splitter/coupler device into plural legs each connected to the ONT devices. The present invention encompasses a novel test apparatus and technique for fault location on Passive Optical Networks (PON) and/or Fiber of the premise Networks (FTTP), encompassing APON, BPON and EPON allowing non-service interruptive test, without damage to the ONT or OLT transceivers. The invention provides service providers the ability to locate a fault occurring on an optical transmission line while the system is actively performing bidirectional optical communication between a

OLT/head-end device and plurality of ONT/subscriber devices.